



SEQUENCE LISTING

<110> Loma Linda University
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Wang, Yubao
Gefu, Wang-Pruski

<120> Method for Studying Protein Interactions in Vivo

<130> 11785-3

<140> US 09/786377

<141> 1999-09-02

<150> US 60/135,835

<151> 1999-05-24

<150> US 60/099,068

<151> 1998-09-03

<150> PCT/US99/20207

<151> 1999-09-02

<160> 10

<170> PatentIn version 3.0

<210> 1

<211> 918

<212> DNA

<213> Homo sapiens

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<221> CDS

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Cys Pro His Arg Leu Leu Pro Pro Leu Leu Leu Leu Ala Leu

1

5

10

15

ctg ctc gct gcc agc cca gga ggc gcc ttg gcg cgg tgc cca ggc tgc 95

Leu Leu Ala Ala Ser Pro Gly Gly Ala Leu Ala Arg Cys Pro Gly Cys

20

25

30

ggg caa ggg gtg cag gcg ggt tgt cca ggg ggc tgc gtg gag gag gag 143

Gly Gln Gly Val Gln Ala Gly Cys Pro Gly Gly Cys Val Glu Glu Glu

| 35 | | | | | 40 | | | | | 45 | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|--|--|
| gat | ggg | ggg | tcg | cca | gcc | gag | ggc | tgc | gcg | gaa | gct | gag | ggc | tgt | ctc | 191 | | | | |
| Asp | Gly | Gly | Ser | Pro | Ala | Glu | Gly | Cys | Ala | Glu | Ala | Glu | Gly | Cys | Leu | | | | | |
| | 50 | | | | | 55 | | | | | 60 | | | | | | | | | |
| agg | agg | gag | ggg | cag | gag | tgc | ggg | gtc | tac | acc | cct | aac | tgc | gcc | cca | 239 | | | | |
| Arg | Arg | Glu | Gly | Gln | Glu | Cys | Gly | Val | Tyr | Thr | Pro | Asn | Cys | Ala | Pro | | | | | |
| | 65 | | | | 70 | | | | | 75 | | | | | | | | | | |
| gga | ctg | cag | tgc | cat | ccg | ccc | aag | gac | gac | gag | gcg | cct | ttg | cgg | gcg | 287 | | | | |
| Gly | Leu | Gln | Cys | His | Pro | Pro | Lys | Asp | Asp | Glu | Ala | Pro | Leu | Arg | Ala | | | | | |
| 80 | | | | | 85 | | | | | 90 | | | | | 95 | | | | | |
| ctg | ctg | ctc | ggc | cga | ggc | cgc | tgc | ctt | ccg | gcc | cgc | gcg | cct | gct | gtt | 335 | | | | |
| Leu | Leu | Leu | Gly | Arg | Gly | Arg | Cys | Leu | Pro | Ala | Arg | Ala | Pro | Ala | Val | | | | | |
| | | | 100 | | | | 105 | | | | | | 110 | | | | | | | |
| gca | gag | gag | aat | cct | aag | gag | agt | aaa | ccc | caa | gca | ggc | act | gcc | cgc | 383 | | | | |
| Ala | Glu | Glu | Asn | Pro | Lys | Glu | Ser | Lys | Pro | Gln | Ala | Gly | Thr | Ala | Arg | | | | | |
| | 115 | | | | | 120 | | | | | 125 | | | | | | | | | |
| cca | cag | gat | gtg | aac | cgc | aga | gac | caa | cag | agg | aat | cca | ggc | acc | tct | 431 | | | | |
| Pro | Gln | Asp | Val | Asn | Arg | Arg | Asp | Gln | Gln | Arg | Asn | Pro | Gly | Thr | Ser | | | | | |
| | 130 | | | | 135 | | | | | | 140 | | | | | | | | | |
| acc | acg | ccc | tcc | cag | ccc | aat | tct | gcg | ggt | gtc | caa | gac | act | gag | atg | 479 | | | | |
| Thr | Thr | Pro | Ser | Gln | Pro | Asn | Ser | Ala | Gly | Val | Gln | Asp | Thr | Glu | Met | | | | | |
| | 145 | | | | 150 | | | | | 155 | | | | | | | | | | |
| ggc | cca | tgc | cgt | aga | cat | ctg | gac | tca | gtg | ctg | cag | caa | ctc | cag | act | 527 | | | | |
| Gly | Pro | Cys | Arg | Arg | His | Leu | Asp | Ser | Val | Leu | Gln | Gln | Leu | Gln | Thr | | | | | |
| 160 | | | | | 165 | | | | | 170 | | | | | 175 | | | | | |
| gag | gtc | tac | cga | ggg | gct | caa | aca | ctc | tac | gtg | ccc | aat | tgt | gac | cat | 575 | | | | |
| Glu | Val | Tyr | Arg | Gly | Ala | Gln | Thr | Leu | Tyr | Val | Pro | Asn | Cys | Asp | His | | | | | |
| | | | 180 | | | | 185 | | | | | | 190 | | | | | | | |
| cga | ggc | ttc | tac | cgg | aag | cgg | cag | tgc | cgc | tcc | tcc | cag | ggg | cag | cgc | 623 | | | | |
| Arg | Gly | Phe | Tyr | Arg | Lys | Arg | Gln | Cys | Arg | Ser | Ser | Gln | Gly | Gln | Arg | | | | | |
| | 195 | | | | | 200 | | | | | | 205 | | | | | | | | |
| cga | ggt | ccc | tgc | tgg | tgt | gtg | gat | cgg | atg | ggc | aag | tcc | ctg | cca | ggg | 671 | | | | |
| Arg | Gly | Pro | Cys | Trp | Cys | Val | Asp | Arg | Met | Gly | Lys | Ser | Leu | Pro | Gly | | | | | |
| | 210 | | | | 215 | | | | | 220 | | | | | | | | | | |
| tct | cca | gat | ggc | aat | gga | agc | tcc | tcc | tgc | ccc | act | ggg | agt | agc | ggc | 719 | | | | |
| Ser | Pro | Asp | Gly | Asn | Gly | Ser | Ser | Ser | Cys | Pro | Thr | Gly | Ser | Ser | Gly | | | | | |
| | 225 | | | | 230 | | | | | 235 | | | | | | | | | | |

taaagctggg ggatagaggg gctgcagggc cactggaagg aacatggagc tgtcatcact
779

caacaaaaaa ccgagggcct caatccacct tcaggccccg ccccatgggc ccctcaccgc
839

tggttggaag gagtggtggt gttggctggg gtgtcaataa agctgtgctt ggggtcgctg
899

aaaaaaaaaa aaaaaaaaaa 918

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<212> PRT
<213> Homo sapiens

<400> 2

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Leu Ala Ala Ser Pro Gly Gly Ala Leu Ala Arg Cys Pro Gly Cys Gly
20 25 30

Gln Gly Val Gln Ala Gly Cys Pro Gly Gly Cys Val Glu Glu Glu Asp
35 40 45

Gly Gly Ser Pro Ala Glu Gly Cys Ala Glu Ala Glu Gly Cys Leu Arg
50 55 60

Arg Glu Gly Gln Glu Cys Gly Val Tyr Thr Pro Asn Cys Ala Pro Gly
65 70 75 80

Leu Gln Cys His Pro Pro Lys Asp Asp Glu Ala Pro Leu Arg Ala Leu
85 90 95

Leu Leu Gly Arg Gly Arg Cys Leu Pro Ala Arg Ala Pro Ala Val Ala
100 105 110

Glu Glu Asn Pro Lys Glu Ser Lys Pro Gln Ala Gly Thr Ala Arg Pro
115 120 125

Gln Asp Val Asn Arg Arg Asp Gln Gln Arg Asn Pro Gly Thr Ser Thr
130 135 140

Thr Pro Ser Gln Pro Asn Ser Ala Gly Val Gln Asp Thr Glu Met Gly
145 150 155 160

Pro Cys Arg Arg His Leu Asp Ser Val Leu Gln Gln Leu Gln Thr Glu

165

170

175

Val Tyr Arg Gly Ala Gln Thr Leu Tyr Val Pro Asn Cys Asp His Arg
 180 185 190

Gly Phe Tyr Arg Lys Arg Gln Cys Arg Ser Ser Gln Gly Gln Arg Arg
 195 200 205

Gly Pro Cys Trp Cys Val Asp Arg Met Gly Lys Ser Leu Pro Gly Ser
 210 215 220

Pro Asp Gly Asn Gly Ser Ser Ser Cys Pro Thr Gly Ser Ser Gly
 225 230 235

<210> 3
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 <213> Renilla reniformis

<220>
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 <222> (10)..(945)

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Met Thr Ser Lys Val Tyr Asp Pro Glu Gln Arg Lys Arg Met
 1 5 10

ata act ggt ccg cag tgg tgg gcc aga tgt aaa caa atg aat gtt ctt 99
 Ile Thr Gly Pro Gln Trp Trp Ala Arg Cys Lys Gln Met Asn Val Leu
 15 20 25 30

gat tca ttt att aat tat tat gat tca gaa aaa cat gca gaa aat gct 147
 Asp Ser Phe Ile Asn Tyr Tyr Asp Ser Glu Lys His Ala Glu Asn Ala
 35 40 45

gtt att ttt tta cat ggt aac gcg gcc tct tct tat tta tgg cga cat 195
 Val Ile Phe Leu His Gly Asn Ala Ala Ser Ser Tyr Leu Trp Arg His
 50 55 60

gtt gtg cca cat att gag cca gta gcg cgg tgt att ata cca gat ctt 243
 Val Val Pro His Ile Glu Pro Val Ala Arg Cys Ile Ile Pro Asp Leu
 65 70 75

att ggt atg ggc aaa tca ggc aaa tct ggt aat ggt tct tat agg tta 291
 Ile Gly Met Gly Lys Ser Gly Lys Ser Gly Asn Gly Ser Tyr Arg Leu
 80 85 90

| | |
|---|-----|
| ctt gat cat tac aaa tat ctt act gca tgg ttt gaa ctt ctt aat tta | 339 |
| Leu Asp His Tyr Lys Tyr Leu Thr Ala Trp Phe Glu Leu Leu Asn Leu | |
| 95 100 105 110 | |
| cca aag aag atc att ttt gtc ggc cat gat tgg ggt gct tgt ttg gca | 387 |
| Pro Lys Lys Ile Ile Phe Val Gly His Asp Trp Gly Ala Cys Leu Ala | |
| 115 120 125 | |
| ttt cat tat agc tat gag cat caa gat aag atc aaa gca ata gtt cac | 435 |
| Phe His Tyr Ser Tyr Glu His Gln Asp Lys Ile Lys Ala Ile Val His | |
| 130 135 140 | |
| gct gaa agt gta gta gat gtg att gaa tca tgg gat gaa tgg cct gat | 483 |
| Ala Glu Ser Val Val Asp Val Ile Glu Ser Trp Asp Glu Trp Pro Asp | |
| 145 150 155 | |
| att gaa gaa gat att gcg ttg atc aaa tct gaa gaa gga gaa aaa atg | 531 |
| Ile Glu Glu Asp Ile Ala Leu Ile Lys Ser Glu Glu Gly Glu Lys Met | |
| 160 165 170 | |
| gtt ttg gag aat aac ttc ttc gtg gaa acc atg ttg cca tca aaa atc | 579 |
| Val Leu Glu Asn Asn Phe Phe Val Glu Thr Met Leu Pro Ser Lys Ile | |
| 175 180 185 190 | |
| atg aga aag tta gaa cca gaa gaa ttt gca gca tat ctt gaa cca ttc | 627 |
| Met Arg Lys Leu Glu Pro Glu Glu Phe Ala Ala Tyr Leu Glu Pro Phe | |
| 195 200 205 | |
| aaa gag aaa ggt gaa gtt cgt cgt cca aca tta tca tgg cct cgt gaa | 675 |
| Lys Glu Lys Gly Glu Val Arg Arg Pro Thr Leu Ser Trp Pro Arg Glu | |
| 210 215 220 | |
| atc ccg tta gta aaa ggt ggt aaa cct gac gtt gta caa att gtt agg | 723 |
| Ile Pro Leu Val Lys Gly Gly Lys Pro Asp Val Val Gln Ile Val Arg | |
| 225 230 235 | |
| aat tat aat gct tat cta cgt gca agt gat gat tta cca aaa atg ttt | 771 |
| Asn Tyr Asn Ala Tyr Leu Arg Ala Ser Asp Asp Leu Pro Lys Met Phe | |
| 240 245 250 | |
| att gaa tcg gat cca gga ttc ttt tcc aat gct att gtt gaa ggc gcc | 819 |
| Ile Glu Ser Asp Pro Gly Phe Phe Ser Asn Ala Ile Val Glu Gly Ala | |
| 255 260 265 270 | |
| aag aag ttt cct aat act gaa ttt gtc aaa gta aaa ggt ctt cat ttt | 867 |
| Lys Lys Phe Pro Asn Thr Glu Phe Val Lys Val Lys Gly Leu His Phe | |
| 275 280 285 | |
| tcg caa gaa gat gca cct gat gaa atg gga aaa tat atc aaa tcg ttc | 915 |

Ser Gln Glu Asp Ala Pro Asp Glu Met Gly Lys Tyr Ile Lys Ser Phe
 290 295 300

gtt gag cga gtt ctc aaa aat gaa caa taa ttactttggt tttttattta 965
 Val Glu Arg Val Leu Lys Asn Glu Gln
 305 310

catttttccc gggtttaata atataaatgt cattttcaac aattttattt taactgaata 1025
 tttcacaggg aacattcata tatgttgatt aatttagctc gaactttact ctgtcatatc 1085
 attttggaat attacctctt tcaatgaaac tttataaaca gtggttcaat taattaatat 1145
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 <213> Renilla reniformis
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 1 5 10 15

Gly Pro Gln Trp Trp Ala Arg Cys Lys Gln Met Asn Val Leu Asp Ser
 20 25 30

Phe Ile Asn Tyr Tyr Asp Ser Glu Lys His Ala Glu Asn Ala Val Ile
 35 40 45

Phe Leu His Gly Asn Ala Ala Ser Ser Tyr Leu Trp Arg His Val Val
 50 55 60

Pro His Ile Glu Pro Val Ala Arg Cys Ile Ile Pro Asp Leu Ile Gly
 65 70 75 80

Met Gly Lys Ser Gly Lys Ser Gly Asn Gly Ser Tyr Arg Leu Leu Asp
 85 90 95

His Tyr Lys Tyr Leu Thr Ala Trp Phe Glu Leu Leu Asn Leu Pro Lys
 100 105 110

Lys Ile Ile Phe Val Gly His Asp Trp Gly Ala Cys Leu Ala Phe His
 115 120 125

Tyr Ser Tyr Glu His Gln Asp Lys Ile Lys Ala Ile Val His Ala Glu
 130 135 140

Ser Val Val Asp Val Ile Glu Ser Trp Asp Glu Trp Pro Asp Ile Glu
145 150 155 160

Glu Asp Ile Ala Leu Ile Lys Ser Glu Glu Gly Glu Lys Met Val Leu
165 170 175

Glu Asn Asn Phe Phe Val Glu Thr Met Leu Pro Ser Lys Ile Met Arg
180 185 190

Lys Leu Glu Pro Glu Glu Phe Ala Ala Tyr Leu Glu Pro Phe Lys Glu
195 200 205

Lys Gly Glu Val Arg Arg Pro Thr Leu Ser Trp Pro Arg Glu Ile Pro
210 215 220

Leu Val Lys Gly Gly Lys Pro Asp Val Val Gln Ile Val Arg Asn Tyr
225 230 235 240

Asn Ala Tyr Leu Arg Ala Ser Asp Asp Leu Pro Lys Met Phe Ile Glu
245 250 255

Ser Asp Pro Gly Phe Phe Ser Asn Ala Ile Val Glu Gly Ala Lys Lys
260 265 270

Phe Pro Asn Thr Glu Phe Val Lys Val Lys Gly Leu His Phe Ser Gln
275 280 285

Glu Asp Ala Pro Asp Glu Met Gly Lys Tyr Ile Lys Ser Phe Val Glu
290 295 300

Arg Val Leu Lys Asn Glu Gln
305 310

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<220>
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<222> (1)..(543)

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Met Gly Ile Pro Met Gly Lys Ser Met Leu Val Leu Leu Thr Phe Leu
1 5 10 15

gcc ttc gcc tcg tgc tgc att gct gct tac cgc ccc agt gag acc ctg 96

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Phe | Ala | Ser | Cys | Cys | Ile | Ala | Ala | Tyr | Arg | Pro | Ser | Glu | Thr | Leu | |
| | | 20 | | | | | 25 | | | | | 30 | | | | |
| tgc | ggc | ggg | gag | ctg | gtg | gac | acc | ctc | cag | ttc | gtc | tgt | ggg | gac | cgc | 144 |
| Cys | Gly | Gly | Glu | Leu | Val | Asp | Thr | Leu | Gln | Phe | Val | Cys | Gly | Asp | Arg | |
| | 35 | | | | | 40 | | | | | 45 | | | | | |
| ggc | ttc | tac | ttc | agc | agg | ccc | gca | agc | cgt | gtg | agc | cgt | cgc | agc | cgt | 192 |
| Gly | Phe | Tyr | Phe | Ser | Arg | Pro | Ala | Ser | Arg | Val | Ser | Arg | Arg | Ser | Arg | |
| | 50 | | | | 55 | | | | 60 | | | | | | | |
| ggc | atc | gtt | gag | gag | tgc | tgt | ttc | cgc | agc | tgt | gac | ctg | gcc | ctc | ctg | 240 |
| Gly | Ile | Val | Glu | Glu | Cys | Cys | Phe | Arg | Ser | Cys | Asp | Leu | Ala | Leu | Leu | |
| | 65 | | | | 70 | | | | 75 | | | | | 80 | | |
| gag | acg | tac | tgt | gct | acc | ccc | gcc | aag | tcc | gag | agg | gac | gtg | tcg | acc | 288 |
| Glu | Thr | Tyr | Cys | Ala | Thr | Pro | Ala | Lys | Ser | Glu | Arg | Asp | Val | Ser | Thr | |
| | | | 85 | | | | | 90 | | | | | 95 | | | |
| cct | ccg | acc | gtg | ctt | ccg | gac | aac | ttc | ccc | aga | tac | ccc | gtg | ggc | aag | 336 |
| Pro | Pro | Thr | Val | Leu | Pro | Asp | Asn | Phe | Pro | Arg | Tyr | Pro | Val | Gly | Lys | |
| | | 100 | | | | | 105 | | | | | 110 | | | | |
| ttc | ttc | caa | tat | gac | acc | tgg | aag | cag | tcc | acc | cag | cgc | ctg | cgc | agg | 384 |
| Phe | Phe | Gln | Tyr | Asp | Thr | Trp | Lys | Gln | Ser | Thr | Gln | Arg | Leu | Arg | Arg | |
| | 115 | | | | | 120 | | | | | 125 | | | | | |
| ggc | ctg | cct | gcc | ctc | ctg | cgt | gcc | cgc | cgg | ggg | cac | gtg | ctc | gcc | aag | 432 |
| Gly | Leu | Pro | Ala | Leu | Leu | Arg | Ala | Arg | Arg | Gly | His | Val | Leu | Ala | Lys | |
| | 130 | | | | 135 | | | | 140 | | | | | | | |
| gag | ctc | gag | gcg | ttc | agg | gag | gcc | aaa | cgt | cac | cgt | ccc | ctg | att | gct | 480 |
| Glu | Leu | Glu | Ala | Phe | Arg | Glu | Ala | Lys | Arg | His | Arg | Pro | Leu | Ile | Ala | |
| | 145 | | | | 150 | | | | 155 | | | | | 160 | | |
| cta | ccc | acc | caa | gac | ccc | gcc | cac | ggg | ggc | gcc | ccc | cca | gag | atg | gcc | 528 |
| Leu | Pro | Thr | Gln | Asp | Pro | Ala | His | Gly | Gly | Ala | Pro | Pro | Glu | Met | Ala | |
| | | | 165 | | | | | 170 | | | | | 175 | | | |
| agc | aat | cgg | aag | tga | | | | | | | | | | | | 543 |
| Ser | Asn | Arg | Lys | | | | | | | | | | | | | |
| | | | 180 | | | | | | | | | | | | | |

<210> 6
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 <212> PRT
 <213> Homo sapiens

<400> 6

Met Gly Ile Pro Met Gly Lys Ser Met Leu Val Leu Leu Thr Phe Leu
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Ala Phe Ala Ser Cys Cys Ile Ala Ala Tyr Arg Pro Ser Glu Thr Leu
20 25 30

Cys Gly Gly Glu Leu Val Asp Thr Leu Gln Phe Val Cys Gly Asp Arg
35 40 45

Gly Phe Tyr Phe Ser Arg Pro Ala Ser Arg Val Ser Arg Arg Ser Arg
50 55 60

Gly Ile Val Glu Glu Cys Cys Phe Arg Ser Cys Asp Leu Ala Leu Leu
65 70 75 80

Glu Thr Tyr Cys Ala Thr Pro Ala Lys Ser Glu Arg Asp Val Ser Thr
85 90 95

Pro Pro Thr Val Leu Pro Asp Asn Phe Pro Arg Tyr Pro Val Gly Lys
100 105 110

Phe Phe Gln Tyr Asp Thr Trp Lys Gln Ser Thr Gln Arg Leu Arg Arg
115 120 125

Gly Leu Pro Ala Leu Leu Arg Ala Arg Arg Gly His Val Leu Ala Lys
130 135 140

Glu Leu Glu Ala Phe Arg Glu Ala Lys Arg His Arg Pro Leu Ile Ala
145 150 155 160

Leu Pro Thr Gln Asp Pro Ala His Gly Gly Ala Pro Pro Glu Met Ala
165 170 175

Ser Asn Arg Lys
180

<210> 7

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<212> DNA

<213> Artificial

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<223> humanized green fluorescence protein cDNA

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<222> (1)..(717)

<223> Humanized Green Fluorescence Protein cDNA

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| Met Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val | |
| 1 5 10 15 | |
| gaa ctg gat ggc gat gtg aat ggg cac aaa ttt tct gtc agc gga gag | 96 |
| Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu | |
| 20 25 30 | |
| ggg gaa ggt gat gcc aca tac gga aag ctc acc ctg aaa ttc atc tgc | 144 |
| Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys | |
| 35 40 45 | |
| acc act gga aag ctc cct gtg cca tgg cca aca ctg gtc act acc ttc | 192 |
| Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Phe | |
| 50 55 60 | |
| tct tat ggc gtg cag tgc ttt tcc aga tac cca gac cat atg aag cag | 240 |
| Ser Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln | |
| 65 70 75 80 | |
| cat gac ttt ttc aag agc gcc atg ccc gag ggc tat gtg cag gag aga | 288 |
| His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg | |
| 85 90 95 | |
| acc atc ttt ttc aaa gat gac ggg aac tac aag acc cgc gct gaa gtc | 336 |
| Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val | |
| 100 105 110 | |
| aag ttc gaa ggt gac acc ctg gtg aat aga atc gag ctg aag ggc att | 384 |
| Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile | |
| 115 120 125 | |
| gac ttt aag gag gat gga aac att ctc ggc cac aag ctg gaa tac aac | 432 |
| Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn | |
| 130 135 140 | |
| tat aac tcc cac aat gtg tac atc atg gcc gac aag caa aag aat ggc | 480 |
| Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly | |
| 145 150 155 160 | |
| atc aag gtc aac ttc aag atc aga cac aac att gag gat gga tcc gtg | 528 |
| Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val | |
| 165 170 175 | |
| cag ctg gcc gac cat tat caa cag aac act cca atc ggc gac ggc cct | 576 |
| Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro | |
| 180 185 190 | |

gtg ctc ctc cca gac aac cat tac ctg tcc acc cag tct gcc ctg tct 624
 Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser
 195 200 205

aaa gat ccc aac gaa aag aga gac cac atg gtc ctg ctg gag ttt gtg 672
 Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val
 210 215 220

acc gct gct ggg atc aca cat ggc atg gac gag ctg tac aag tga 717
 Thr Ala Ala Gly Ile Thr His Gly Met Asp Glu Leu Tyr Lys
 225 230 235

<210> 8
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 <212> PRT
 <213> Artificial

<400> 8

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 20 25 30

Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys
 35 40 45

Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Phe
 50 55 60

Ser Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln
 65 70 75 80

His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg
 85 90 95

Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val
 100 105 110

Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile
 115 120 125

Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn
 130 135 140

Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly
 145 150 155 160

Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val
165 170 175

Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro
180 185 190

Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser
195 200 205

Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val
210 215 220

Thr Ala Ala Gly Ile Thr His Gly Met Asp Glu Leu Tyr Lys
225 230 235

<210> 9
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<212> DNA
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<222> (1)..(333)

<400> 9

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Met Ala Leu Trp Met Arg Leu Leu Pro Leu Leu Ala Leu Leu Ala Leu
1 5 10 15

tgg gga cct gac cca gcc gca gcc ttt gtg aac caa cac ctg tgc ggc 96
Trp Gly Pro Asp Pro Ala Ala Ala Phe Val Asn Gln His Leu Cys Gly
20 25 30

tca cac ctg gtg gaa gct ctc tac cta gtg tgc ggg gaa cga ggc ttc 144
Ser His Leu Val Glu Ala Leu Tyr Leu Val Cys Gly Glu Arg Gly Phe
35 40 45

ttc tac aca ccc aag acc cgc cgg gag gca gag gac ctg cag gtg ggg 192
Phe Tyr Thr Pro Lys Thr Arg Arg Glu Ala Glu Asp Leu Gln Val Gly
50 55 60

cag gtg gag ctg ggc ggg ggc cct ggt gca ggc agc ctg cag ccc ttg 240
Gln Val Glu Leu Gly Gly Gly Pro Gly Ala Gly Ser Leu Gln Pro Leu
65 70 75 80

gcc ctg gag ggg tcc ctg cag aag cgt ggc att gtg gaa caa tgc tgt 288
Ala Leu Glu Gly Ser Leu Gln Lys Arg Gly Ile Val Glu Gln Cys Cys
85 90 95

